IN THE SPECIFICATION:

Please replace the paragraphs on page 2, line 6 through page 2, line 16 with the following amended paragraphs:

--A disadvantage of multi-point sampling is that it does not handle thin edges well. Consider the examples shown in Fig. 1 and Fig. 2. The object being scan converted in both cases is a thin, near-horizontal line 10. In Fig. 1, sampling is performed at nine equally spaced points within each pixel. The white and black circles represent sampling points that lie outside and inside of the line 10 respectively. It can be seen that since all sampling points in pixels 3 and 6 lie outside of the line 10, these pixels will be treated as if they lie completely outside of the line 10, and hence the scan converted line 10 will appear broken.

A similar problem exists in Fig. 2, where sampling is performed over three horizontal line segments per pixel denoted by the dotted lines. The portion of these dotted line segments that lie inside the line 10 being scan converted is highlighted in solid black lines in [[the]] Fig 2. Again, the scan converted line 10 will appear broken at pixels 3 and 6.--

Please replace the Summary of Invention section on page 4, line 15 through page 10, line 23 with the following amended section:

--It is an object of the present invention to substantially overcome, or at least ameliorate, one or more disadvantages of existing arrangements.

According to one aspect of the invention, there is provided a method of rendering objects, the method comprising, for each said object within a scanline, the steps of: determining each boundary pixel that overlaps both sides of a border of the object;

computing a real opacity of each said boundary pixel, wherein said real opacity of a said boundary pixel is dependent upon an intrinsic opacity of the object, winding counts for subregions of said boundary pixel, and values representative of the areas of the respective subregions with respect to the total area of the boundary pixel; and rendering each said boundary pixel ~~with said~~ by compositing using the corresponding computed real opacity.

According to another aspect of the invention, there is provided apparatus for rendering objects, the apparatus comprising processing means for processing each said object within a scanline, the processing means comprising: means for determining each boundary pixel that overlaps both sides of a border of the object; means for computing a real opacity of each said boundary pixel, wherein said real opacity of a said boundary pixel is dependent upon an intrinsic opacity of the object, winding counts for subregions of said boundary pixel, and values representative of the areas of the respective subregions with respect to the total area of the boundary pixel; and means for rendering each said boundary pixel ~~with said~~ by compositing using the corresponding computed real opacity.

According to still another aspect of the invention, there is provided a computer program for rendering objects, the computer program comprising processing code for processing each said object within a scanline, the processing code comprising: code for determining each boundary pixel that overlaps both sides of a border of the object; code for computing a real opacity of each said boundary pixel, wherein said real opacity of a said boundary pixel is dependent upon an intrinsic opacity of the object, winding counts for subregions of said boundary pixel, and values representative of the areas of the respective subregions with respect to the total area of the boundary pixel; and code for rendering each said boundary pixel ~~with said~~ by compositing using the corresponding computed real opacity.

~~According to still another aspect of the invention, there is provided a method of rendering a self-overlapping polygon, wherein the polygon is a set of one or more closed curves each comprising line segments, and the method performing, for a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the steps of: decomposing that portion of the polygon that lies within the currently scanned pixel into a number of closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel; combining incrementally said closed loops and determining one or more winding count values representative of respective weighted averages of winding counts of said combined closed loops; determining a real opacity of the currently scanned pixel according to a predetermined fill rule utilising an intrinsic opacity of said polygon and said one or more winding count values, and rendering said currently scanned pixel with said determined real opacity.~~

~~According to still another aspect of the invention, there is provided a method of rendering a self-overlapping polygon, wherein the polygon is a set of one or more closed curves each comprising line segments, and the method performing, for a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the steps of: decomposing that portion of the polygon that lies within the currently scanned pixel into a number of clockwise or counterclockwise closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the~~

polygon that lies within the currently scanned pixel; combining incrementally said clockwise and counterclockwise closed loops respectively to produce two corresponding regions, and determining two winding count values representative of respective weighted averages of winding counts of said clockwise and counterclockwise closed loops; determining a real opacity of the currently scanned pixel according to a predetermined fill rule utilising an intrinsic opacity of said polygon and said two winding count values, and rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided a method of rendering a self-overlapping polygon in accordance with an odd-even fill rule, wherein the polygon is a set of one or more closed curves each comprising line segments, and the method performing, for a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the steps of: decomposing that portion of the polygon that lies within the currently scanned pixel into a number of closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel ; combining incrementally said closed loops and determining a winding count value representative of a weighted average of winding counts of said closed loops, wherein said weighted average is effectively equivalent to the area of the combined loops; determining a real opacity of the currently scanned pixel, where the real opacity of the currently scanned pixel is representative of the product of an intrinsic opacity of said polygon and said winding count value, and rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided apparatus for rendering a self-overlapping polygon, wherein the polygon is a set of one or more closed curves each comprising line segments, and the apparatus comprising means for processing a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the processing means comprising: means for decomposing that portion of the polygon that lies within the currently scanned pixel into a number of closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel ;

means for combining incrementally said closed loops and determining one or more winding count values representative of respective weighted averages of winding counts of said combined closed loops; means for determining a real opacity of the currently scanned pixel according to a predetermined fill rule utilising an intrinsic opacity of said polygon and said one or more winding count values, and means for rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided apparatus for rendering a self-overlapping polygon, wherein the polygon is a set of one or more closed curves each comprising line segments, and the apparatus comprising means for processing a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the processing means comprising: means for decomposing that portion of the polygon that lies within the currently scanned pixel into a number of clockwise or counterclockwise closed loops comprising at least those portions of those line segments that lie within the currently

scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel; means for combining incrementally said clockwise and counterclockwise closed loops respectively to produce two corresponding regions, and determining two winding count values representative of respective weighted averages of winding counts of said clockwise and counterclockwise closed loops; means for determining a real opacity of the currently scanned pixel according to a predetermined fill rule utilising an intrinsic opacity of said polygon and said two winding count values, and means for rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided apparatus for rendering a self-overlapping polygon in accordance with an odd-even fill rule, wherein the polygon is a set of one or more closed curves each comprising line segments, and the apparatus comprising means for processing a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the processing means comprising: means for decomposing that portion of the polygon that lies within the currently scanned pixel into a number of closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel ; means for combining incrementally said closed loops and determining a winding count value representative of a weighted average of winding counts of said closed loops, wherein said weighted average is effectively equivalent to the area of the combined loops; means for determining a real opacity of the currently scanned pixel, where the real opacity of the currently scanned pixel is representative of the product of an intrinsic opacity of said

polygon and said winding count value, and means for rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided a computer program for rendering a self-overlapping polygon, wherein the polygon is a set of one or more closed curves each comprising line segments, and the computer program comprising code for processing a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the processing code comprising: code for decomposing that portion of the polygon that lies within the currently scanned pixel into a number of closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel ; code for combining incrementally said closed loops and determining one or more winding count values representative of respective weighted averages of winding counts of said combined closed loops; code for determining a real opacity of the currently scanned pixel according to a predetermined fill rule utilising an intrinsic opacity of said polygon and said one or more winding count values; and code for rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided a computer program for rendering a self-overlapping polygon, wherein the polygon is a set of one or more closed curves each comprising line segments, and the computer program comprising code for processing a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the processing code comprising: code for decomposing that portion of the polygon that lies

within the currently scanned pixel into a number of clockwise or counterclockwise closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel; code for combining incrementally said clockwise and counterclockwise closed loops respectively to produce two corresponding regions, and determining two winding count values representative of respective weighted averages of winding counts of said clockwise and counterclockwise closed loops; code for determining a real opacity of the currently scanned pixel according to a predetermined fill rule utilising an intrinsic opacity of said polygon and said two winding count values, and code for rendering said currently scanned pixel with said determined real opacity.

According to still another aspect of the invention, there is provided a computer program for rendering a self-overlapping polygon in accordance with an odd-even fill rule, wherein the polygon is a set of one or more closed curves each comprising line segments, and the computer program comprising code for processing a currently scanned pixel that overlaps both sides of a said line segment of the self-overlapping polygon within a currently scanned scanline, the processing code comprising: code for decomposing that portion of the polygon that lies within the currently scanned pixel into a number of closed loops comprising at least those portions of those line segments that lie within the currently scanned pixel, said closed loops are such that when they are combined the combination is substantially equivalent to that portion of the polygon that lies within the currently scanned pixel ; code for combining incrementally said closed loops and determining a winding count value representative of a weighted average of winding counts of said closed loops, wherein said weighted average is effectively equivalent to the area of

~~the combined loops; code for determining a real opacity of the currently scanned pixel, where the real opacity of the currently scanned pixel is representative of the product of an intrinsic opacity of said polygon and said winding count value, and code for rendering said currently scanned pixel with said determined real opacity.~~--